

BAJA-CALIFORNIA 500-kV TRANSMISSION LINE INTERCONNECTION PROJECT

EAD staff are conducting an environmental analysis of a 180-mile-long corridor for a transmission line between the Palo Verde Nuclear Generating Station and a point on the U.S. border near Calexico, California. The analysis addresses technical topics such as rights-of-way management, the effects of electromagnetic fields (EMFs) on human health, and the effects of line construction and operation on cultural resources and biotic communities. The project must meet the mitigation and environmental planning and review requirements of multiple agencies with land jurisdiction responsibilities, including the Bureau of Land Management (BLM), Bureau of Reclamation, and Arizona State Lands Department.

■ PROBLEM/OPPORTUNITY

Before the U.S. Department of Energy (DOE) can grant a Presidential Permit to connect a U.S. transmission line and a Mexican line at the U.S. border, it requires environmental information. In addition, the planning and permitting requirements of multiple federal and state agencies must be considered. EAD staff will produce ecological assessments, evaluations of archaeological survey information, land use analyses, and mitigation plans. BLM, which has jurisdictional responsibility for a major portion of the transmission line right-of-way, will participate as a cooperating agency with EAD in the environmental impact statement (EIS) process.

■ APPROACH

EAD will use a combination of low-level aerial photographs, infrared photographs, and ground-truth data to identify potentially sensitive native vegetative communities and residential areas and to quantify the extent of desert washes and other riparian areas. Early in the route selection process, the EAD team developed environmental constraints to eliminate some of the transmission line routes being considered, thereby helping the applicant select a route. EAD also used published information and agency input to

define viable alternative routes, emphasizing the need for consensus among agencies and project proponents.

■ RESULTS

Ecosystem components that could be affected by line construction include riparian vegetation and several endangered wildlife species, such as the yuma clapper rail, desert tortoise, southwestern willow flycatcher, and cactus ferruginous pygmy owl. EAD's analysis will determine the locations of known habitats for these species. Information on construction impacts and measures for avoiding sensitive habitats and breeding periods will be included in the EIS. Since archaeological sites are abundant along the proposed right-of-way, EAD will interact with Native Americans to determine the historic significance of these sites, learn about any past disturbances, and identify appropriate mitigation measures. Visual simulation models will be used to produce photographs of how the transmission line will appear in scenic viewsheds. The focus will be on three BLM-designated wilderness areas along the route and areas of high recreational use. Land use analyses will consider both existing use patterns and the changes that

are projected in land use plans. From a land use perspective, impacts to recreational use and agricultural production in the Imperial Valley of California are expected to be the most important. Electric and magnetic field strengths along the 500-kV transmission line right-of-way will be graphically presented, as will information on the nearest residences. Recent literature on EMFs will be reviewed as the basis for predicting possible impacts to humans from exposure to the line.

■ HISTORY/STATUS/FUTURE

Since 1979, Argonne scientists have helped DOE's Office of Fossil Energy conduct environmental impact assessments for electric transmission lines. Projects have involved the states of Maine, New Hampshire, Minnesota, Texas, Montana, and Washington. In addition, Argonne has prepared guidance documents for the electric utility industry that address transmission line design options and costs, environmental assessments, and state permitting and environmental review requirements for transmission lines in the 14 border states. Anticipated future work includes the review and preparation of additional National Environmental Policy Act documents, preparation of geographic information systems and database systems for DOE use, and assistance to industries in implementing route selection methodologies by using computerized systems.

■ COMMUNICATION OF RESULTS

Argonne has prepared technical reports on design options for and the costs and EMF levels of extra-high-voltage transmission lines and guidance on the preparation of environmental assessment documents. Subjects planned for

conference papers include Argonne's cultural resource assessment approach and the integrated environmental assessment approach, which is designed to accomplish the planning and mitigation objectives of multiple agencies for electric power line projects. EAD will prepare an open-literature publication on the potential ecological impacts of transmission line construction on coppice dune environments and riparian systems of desert regions.

Some recent EAD publications on transmission lines include these:

- *Final Environmental Impact Statement for Construction and Operation of the Proposed Bangor Hydro-Electric Company's Second 345 kV Transmission Tie Line to New Brunswick*, DOE/EIS-0166
- *Transmission Line Environmental Assessment Guidance Document*, ANL/EAD/TM-3
- *Electric Power High-Voltage Transmission Lines: Design Options, Cost, and Electric and Magnetic Field Levels*, ANL/EAD/TM-31



Government agencies conduct assessments to ensure transmission lines will not adversely affect ecologically sensitive areas.